

**IN THE CLAIMS:**

Please cancel claims 1-3 without prejudice. Submitted herewith are new claims 4, 5 and 6.  
New claim 4 is supported by way of an example in Figure 4, wherein there is indeed disclosed.

**Listing of Claims:**

Claims 1-3 (canceled)

Claim 4 (new): A magnetic bearing apparatus having a supporting electromagnet capable of generating a magnetic force to support a supported member without contact by the magnetic force generated by supplying a control current to the electromagnet from a power amplifier, said apparatus comprising:

a current sensor for detecting a control current output from power amplifier;

a displacement sensor for detecting a displacement of the supported member; and

a magnetic flux or a magnetic flux density estimating means coupled to the current sensor and the displacement sensor to output an estimated value representing a magnetic flux or a magnetic flux density between the supporting electromagnet and the supported member on the basis of a control current detection signal representing the control current from the current sensor and a displacement detection signal representing the displacement from the displacement sensor, the estimated value being fed from the estimating means back to the power amplifier.

Claim 5 (new): A magnetic bearing apparatus according to claim 4, further comprising a regulator coupled to the current sensor to supply a signal corresponding to the control current to the power amplifier.

Claim 6 (new): A magnetic bearing apparatus according to claim 4, further comprising a voltage sensor for detecting a voltage across the supporting electromagnet so as to supply a voltage detection signal from the voltage sensor to the power amplifier.